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North and Intermountain Regions

IDAHO Forest Insect and Disease Conditions 1980

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ROCKY MOUNTA TION

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Cover Photos

(front)
Grand fir killed by the fir engraver beetle, Scolytus ventralis. This pest is a chronic problem in Idaho.

(back)
A female western spruce budworm with a freshly laid egg mass. This budworm infests portions of all forested areas in Idaho.

FOREST INSECT AND DISEASE CONDITIONS IN IDAHO

1980

by

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MAP showing areas infested with Douglas-fir beetle, mountain pine beetle, white pine blister rust, and pine engraver beetle

MAP showing areas infested with fir engraver beetle, western spruce budworm, and larch problems

INTRODUCTION

This report summarizes for the State of Idaho the results of aerial and ground surveys conducted in 1980 by the Idaho Department of Lands and the USDA-Forest Service, Northern and Intermountain Regions, to detect forest insect and disease outbreaks or problems. The report has been prepared through a cooperative effort of the State of Idaho and the USDA-Forest Service.

The maps at the end of this report and narrative portion cover pest conditions on forested lands of all ownerships within the State. The green portions of the maps are National Forest land, the white is State, private, and other Federal with major blocks of State ownership outlined with a heavy dark line.

Due to the difficulty of making accurate estimates of the number of trees killed while flying aerial surveys (90-120 mph, 500-2,000 ft), these values should not be taken to be an exact measurement of the damage that has occurred. Comparison of aerial survey data with ground check plots during past surveys has shown that the estimates of number of trees killed are consistently low. However, the location and trends of damage from one year to the next can be accurately shown by the maps and by comparison of this year's counts with last year's.

The cause of damage cannot always be accurately assessed from the air. Because only limited ground checking occurred in 1980, the cause of mortality is based largely on ground survey results from prior years and long-term observations in the area.

CONDITIONS IN BRIEF

The mountain pine beetle continues to be the most damaging forest insect in Idaho, causing mortality of an estimated 4,587,300 trees, predominantly lodgepole pine. The fir engraver was the second most damaging bark beetle and killed an estimated 20,870 grand fir trees. Overall damage by the Douglas-fir beetle and the pine engraver beetle was at low levels for 1980.

The western spruce budworm continues to be the most damaging defoliator, causing visible defoliation on 1,311,800 acres throughout the State. The Douglas-fir tussock moth is at a very low level, except for an apparently higher population in the Owyhee Mountains. No gypsy moths were found. The new budworm, Argyrotaenia near gogana, found north of Wallace, Idaho, has increased its range from 1979 and caused defoliation on an additional 4,500 acres in 1980.

Foliage diseases were unusually apparent throughout the State in 1980. Almost all major tree species suffered from needle pathogens and there were numerous reports of foliage problems. In the Cascade-McCall area, discoloration on Douglas-fir and larch was attributed to environmental conditions. While the infected needles are readily observed, actual timber losses from foliage diseases are probably low. Although severely affected trees may have experienced growth losses, most trees will probably recover unless environmental conditions in the spring of 1981 again favor continued disease spread.

Root diseases continue to be the major long-range concern. They are widely distributed and many stands have been severely damaged. Control is difficult.

Nurseries in northern Idaho experienced problems with grey mold blight and Sirococcus blight, a disease not previously reported from the area.

ENTOMOLOGY

BARK BEETLES

Mountain Pine Beetle

The mountain pine beetle continues to cause significant mortality of lodgepole, ponderosa, and western white pine throughout Idaho. The oldest and most damaging outbreaks are south of the Salmon River. Newer infestations have been observed in northern Idaho during the past 2 to 3 years with a definite increase in tree killing.

In southeastern Idaho the massive infestation in lodgepole pine on the Targhee National Forest and adjoining State and private lands declined approximately 25 percent from 1979. Despite this reduction, the trees killed in 1980 were estimated at nearly 4.1 million. Additional mortality occurred on the south side of Palisades Reservoir on Caribou National Forest lands where over 4,000 dying trees were observed in the McCoy Creek area.

In south-central Idaho on the Sawtooth and Boise National Forests and adjacent private lands, there are several intensive lodgepole pine mortality centers. In the Wood River drainage, approximately 6,000 dead trees were seen from Galena Summit south to Ketchum. The damage is apparently increasing here as the infested area was larger in 1980 than in 1979. In the upper reaches of the North, Middle, and South Forks of the Boise River, there are an additional 7,500 dead trees. The North Fork outbreak was sighted for the first time in 1980.

In southwestern Idaho, the killing of lodgepole pine is accelerating. On the Boise National Forest approximately 6,500 newly dead trees were seen to the east and north of Deadwood Reservoir. This infestation has persisted in the area for several years. Lodgepole and ponderosa pine have suffered heavy mortality along the North Fork of the Payette River and in several of its tributaries from just north of Cascade south to Smith's Ferry. The area to the east of the towns of Donnelly and Lake Fork, between Boulder Creek and Kennally Creek, has especially heavy mortality and approximately 22,000 dead trees were mapped in 1980. To the west, smaller infestations are continuing in the Johnson Creek-Hornet Reservoir area, around the Lost Valley Reservoir, and in the upper end of Lick Creek, a tributary of Wildhorse River.

In northern Idaho, mountain pine beetle outbreaks are generally much younger and less extensive than in southern Idaho. One major reason for the difference is that pure, mature lodgepole pine stands in the north are not as extensive as in the south. In northern Idaho western white pine also serves as a host along with lodgepole and ponderosa pines.

The major damage areas are on the Nezperce and Idaho Panhandle National Forests and on State and private lands south of Lewiston, Idaho. On the Nezperce the main damage is concentrated near Elk City on State, private, and Federal lands, and in the upper reaches of the Red River on National Forest lands. The beetle was found killing root-diseased lodgepole pines at several locations on the Nezperce National Forest. South of Lewiston the outbreak has persisted in lodgepole near Soldiers Meadows Reservoir for 3 to 4 years. In this area there has been an intensive salvage operation with some harvest of susceptible green trees in an effort to avoid further damage. Complex ownership problems have made management against the beetle difficult.

In several areas of northern Idaho the mountain pine beetle has caused damage in stands of western white pine: at the headwaters of the Lochsa River (Clearwater NF), between the Coeur d'Alene River and Halfway Peak north of Kellogg, Idaho, and near Iron Mountain southeast of Bonners Ferry (Idaho Panhandle NF's). White pine weakened by white pine blister rust are often killed by mountain pine beetle.

The total number trees killed by mountain pine beetle in Idaho during 1980 for all areas is shown in tables 1 and 2.

Fir Engraver Beetle

Over the past several years, fir engraver beetle activity has fluctuated considerably. The main damage has been in northern Idaho where the insect killed approximately 20,900 grand fir trees in 1980, 6,700 in 1979, and 13,000 in 1978. The 1980 map shows 17 locations of concentrated activity with a total of 18,635 dead trees. Many other dead trees are scattered singly or in very small groups throughout the range of the host. Although dead trees have increased the overall activity level is low at this time. Research and survey results have shown that a high proportion of beetle attacked grand fir have severely diseased roots.

Douglas-fir Beetle

Overall, the Douglas-fir beetle has declined steadily since 1978 and the pattern continued in 1980. Mortality groups generally were smaller and more widespread than in past years. In the 12 areas of concentrated mortality shown on the map (areas A-L) only 3,625 dead trees were counted, 12,600 less than were seen in the same general areas in 1979. The greatest decrease occurred in northern Idaho in the Nezperce National Forest. Ground survey data showed that a substantial portion of Douglas-fir mortality on the Nezperce was in root-diseased stands.

Table 1.--1980 Southern Idaho bark beetle conditions; trees killed by bark beetles

National Forest and adjacent State and Private (S&P)	Number of trees killed		
	Mountain pine beetle	Douglas-fir beetle	Pine engraver beetle
Boise NF	37,311	1,406	5,049
S&P	17,550	1,720	15
Caribou NF	7,485	190	--
S&P	110		50
Challis NF	30	--	--
S&P			
Payette NF	23,113	1,265	593
S&P	13,600	15	
Salmon NF	--	64	277
S&P		80	
Sawtooth NF	18,785	660	--
S&P	360		--
Targhee NF	4,100,000	271	--
S&P	345,000		220
Total NF	4,186,724	3,856	5,919
Total S&P	376,620	1,815	285
Grand Total	4,563,344	5,671	6,204

Table 2.--1980 Northern Idaho bark beetle conditions; trees killed by bark beetles

NATIONAL FOREST 1/ OR STATE FOREST PROTECTIVE DISTRICT		MOUNTAIN PINE BEETLE		FIR ENGRAVER BEETLE		DOUGLAS-FIR BEETLE		PINE ENGRAVER BEETLE		WESTERN BALSAM BARK BEETLE	
		Trees 2/ killed	Volume MBF	Trees 3/ killed	Volume MBF	Trees 4/ killed	Volume MBF	Trees 5/ killed	Volume MBF	Trees 6/ killed	Volume MBF
IPNF	1979	146	87.0	1,218	365.4	317	126.8	83			
	1980	3,647	2,131.9	6,121	1,836.3	55	22.0	162			
Clearwater	1979	2	1.2	414	124.2	976	390.4	5		--	
	1980	178	74.2	1,301	389.1	178	62.4	30		30	
Nezperce	1979	845	68.5	98	29.4	3,950	1,552.8	20		--	
	1980	2,141	178.6	3,627	1,088.1	1,531	612.4	388		815	
Priest Lake	1979			175	52.5	40	16.0	10			
	1980			95	28.5	--	--	80			
Pend Oreille	1979	--	--	302	90.6	--		1,072			
	1980	22	1.1	290	87.0	48	14.4	3,391			
Mica	1979	--	--	812	243.6	10	4.0	870			
	1980	148	7.4	767	230.1	38	15.2	12,498			
Cataldo	1979	--	--	--	--			--			
	1980	2,011	171.6	547	164.1			56			
West St. Joe	1979			1,830	549.0	--	--	275			
	1980			3,715	1,114.5	345	138.0	5,116			
Kendrick	1979			850	225.0	--	6.4	176			
	1980			1,697	509.1	16		1,011			
C.P.T.P.A.	1979	--	--	1,531	459.3	199	79.6	15			
	1980	42	20.2	2,308	692.4	191	73.2	50			
Craig Mtns.	1979	10,321	877.3	381	114.3	418	167.2	143			
	1980	15,955	1,381.9	261	78.3	213	85.2	4,830			
Maggie Cr.	1979	--	--	76	22.8	35	14.0	5			
	1980	4	1.6	110	33.0	53	15.9	1			
Totals	1979	11,314		7,687		5,945		2,674		--	
	1980	24,148		20,839		2,668		27,613		845	
Net Change		+12,834		+13,152		-3,277		+24,939		+845	

1/ All ownerships within National Forest boundaries, exclusive of State Forest Protective Districts
2/ Lodgepole, ponderosa, and western white pine
3 Grand fir
4/ Douglas-fir
5/ Ponderosa pine
6/ Subalpine fir

Pine Engraver Beetle

Pine engraver beetle populations for the State have increased overall, mainly due to the threefold increase in activity in northern Idaho. The number of dead trees in the areas shown on the map increased from 8,300 in 1979 to 28,165 in 1980. The increases were principally on State and private lands from Moscow to Priest River.

The beetle caused scattered mortality in ponderosa pine stands in southern Idaho but at a reduced level from past years. The most serious infestation is in the Idaho City area where an estimated 2,000 second growth ponderosa pine were killed. Scattered mortality was also observed on the Payette and Salmon National Forests.

Western Pine Beetle

Western pine beetle infestations have declined to low levels throughout the State and are confined mainly to single large overmature ponderosa pines widely scattered throughout the pine type. One exception is a forested cemetery in the city of Coeur d'Alene. The cemetery has a dense stand of approximately 600 mature ponderosa pine, 80 of which have been killed by beetles during the past 3 years. Infested trees are currently being removed as a control effort.

Western Balsam Bark Beetle

The western balsam bark beetle is a perennial cause of mortality throughout the subalpine fir habitat type of Idaho. Chronic populations exist in the mountains of eastern Idaho and other areas. In northern Idaho an outbreak on the Nezperce National Forest killed 815 trees in 1980.

MAJOR DEFOLIATORS

Western Spruce Budworm

Defoliation caused by western spruce budworm increased by over 123,500 acres within the State between 1979 and 1980. Total defoliation was 1,311,800 acres. The greatest increases were in eastern Idaho on the Targhee and Caribou National Forests and on adjacent State and private lands.

Defoliation remained at a very low level in northern Idaho in 1980, but it did increase slightly. No defoliation was observed in 1979. For 1980, 600 acres of light defoliation were aerially detected on the Idaho Panhandle National Forests southeast of Avery. On the Clearwater National Forest 320 acres of light defoliation were mapped east of Pierce and north of Kelly Creek Ranger Station. Another 850 acres of light defoliation were detected on the Nezperce National Forest near Magruder.

In southern Idaho the budworm defoliated approximately 1,310,000 acres, an increase of over 121,800 acres over 1979 (table 3). Increases in visible defoliation occurred on the Salmon National Forest and adjacent BLM lands and the Targhee and Caribou National Forests. The Targhee National Forest showed the greatest increase in defoliation; an additional 200,000 acres were mapped this year for a total of 405,000 acres. Defoliation increased on the Caribou National Forest as the result of an expansion from the existing infestation on the Targhee National Forest near Palisades Reservoir. Decreases in budworm activity occurred throughout the Boise National Forest, with the exception of the Deadwood Reservoir area where 65,000 acres of new defoliation were recorded primarily in Douglas-fir. On the Payette National Forest a decrease of 100,000 acres occurred mostly in grand fir in the West Mountain and Boulder Creek areas.

The main western spruce budworm infestation on State and private lands lies to the south and east of Idaho Falls in the Blackfoot Mountains, Sheep Mountain, and Brockman areas. Aerial survey of the Blackfoot Mountains area showed increased defoliation in 1980, with 5,830 additional acres visibly defoliated; total defoliation is 17,930 acres. Top kill of subalpine fir was also seen for the first time. Egg populations were surveyed, and moderate to heavy defoliation is anticipated for 1981 with subsequent increased growth loss and top kill. Predicted defoliation is very light for Sheep Mountain but moderate to heavy for the Brockman area.

Table 3.-- Southern Idaho acres of spruce budworm defoliation

National Forest and adjacent State and private (S&P)	Acres
Boise NF	204,181
S&P	10,880
Caribou NF	61,722
S&P	18,530
Challis NF	--
S&P	
Payette NF	207,617
S&P	24,000
Salmon NF	363,496
S&P	8,000
Sawtooth NF	--
S&P	--
Targhee NF	405,359
S&P	6,200
Total NF	1,242,375
Total S&P	67,610
Grand Total	1,309,985

Douglas-fir Tussock Moth

Again in 1980 no evidence of Douglas-fir tussock moth activity was observed through the extensive aerial detection surveys. Pheromone-baited sticky traps were placed at all known locations of previous tussock moth outbreaks. Although a few moths were captured, numbers were too low to suggest a significant population buildup in 1981. One exception was near South Mountain in the Owyhee Mountains of southwestern Idaho. Pheromone traps in this area caught enough moths to warrant closer checking in 1981. Moths or caterpillars were also found in two residential areas--near Hailey, Idaho, and in ornamental spruce on a farm just north of Grangeville, Idaho. These findings are of interest as previous outbreaks have been prefaced by finding tussock moths in residential areas.

Table 4.--Douglas-fir tussock moth pheromone trapping results.

Plot location	Moths caught in 1980 survey traps
Elk Mountain	0
Coeur d'Alene Mountain	0
Lolo Pass	0
Charles Butte	0
Peterson Point	0
East Dennis	0
East Gold Hill	0
Flat Creek	1
Long Creek	0
Paradise Point	0
Mineral Mountain	0
Mission Mountain	0
Spring Valley	0
Vassar Meadows	0
Bedrock Gulch	0
Lightning Creek	0
Caribou Creek	0
Troy	0
Moscow	0
Coeur d'Alene	0
Dewey Peak	275
Mill Creek	3
Lodge Point	1
Pine Knob	0
Potato Hill	0
Big Tinker Creek	2
Shells Lick	0
Fish Creek	0
Free Use	0
South Fork Cow Creek	0
Cow Creek Saddle	0
Christie Creek	0

Larch Casebearer

Larch casebearer defoliation was about the same in intensity and extent in northern Idaho as it was in 1979. Associated needle diseases made it difficult to determine how much casebearer defoliation actually exists.

In southern Idaho, the larch casebearer has continued to expand its range to match the range of larch, and in some areas the populations have increased significantly from prior years.

A New Budworm

This insect (Argyrotaenia near gogana) was first reported as a significant forest pest in 1978, when about 40 acres of mainly mountain hemlock were heavily defoliated in the Shoshone Creek drainage north of Wallace. The infestation spread to about 1,500 acres of aerially visible defoliation in 1979. In 1980 over 4,500 acres were defoliated on the Idaho Panhandle National Forests and additional defoliation exists in adjacent stands on the Lolo National Forest in Montana (figure 1). Top killing of trees, especially the understory, is quite pronounced in some areas.

Western Pine Shoot Borer

The western pine shoot borer is coming to be recognized as a forest insect pest of serious consequence, especially in second growth ponderosa pine. It has been found in all ponderosa pine stands surveyed to date. It has been especially prevalent in open, second growth stands where it causes significant loss of height growth.

Gypsy Moth

No gypsy moths were found in our pheromone trapping surveys in 1980. Attractant traps were placed at 108 sites throughout the State, in campgrounds, rest stops, trailer parks, and other sites where tourists would likely stop. These sites were monitored because the spread of gypsy moth into Idaho is most likely to occur on vehicles from infested areas.

CONE AND SEED INSECTS

Surveys were conducted in 11 seed production areas and one seed orchard on the Idaho Panhandle, Clearwater, and Nezperce National Forests. Insects, primarily cone worms, midges, and cone beetles, caused damage at some locations in up to 75 percent of the cones of some tree species. As a rule, the smaller the cone crop, the greater the amount of injury.

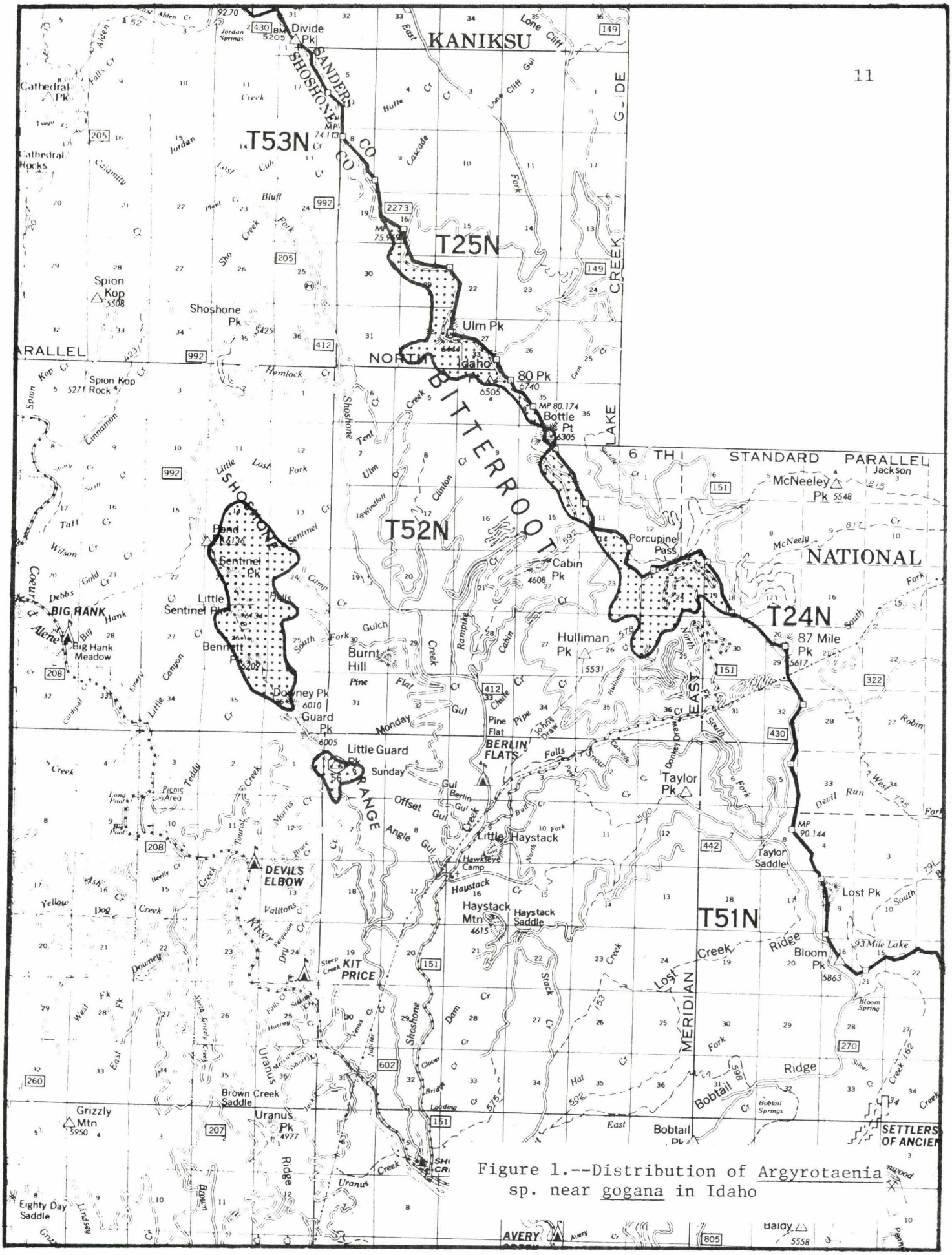

Figure 1.--Distribution of Argyrotaenia sp. near gogana in Idaho

PATHOLOGY

FOLIAGE DISEASES

Needle diseases were widespread in 1980. Prolonged cool, moist weather may have provided ideal conditions for many needle fungi.

Douglas-Fir Foliage Diseases

During the summer, locally heavy discoloration of the interior needles on Douglas-fir of all size classes was noted in the forests around Cascade, Idaho. Similar symptoms were observed in other southern Idaho stands where Douglas-fir was a major component. Since needle fungi or other pathogens were not associated with the discoloration, climatic factors were probably involved.

Rhabdocline needle cast was occasionally observed on Douglas-fir during the spring in Long Valley and Round Valley near McCall, Idaho. Moderate spotting levels of current year's foliage were also noted during the fall.

Larch Foliage Diseases

Western larch experienced a variety of foliage problems throughout the year. Approximately 7,000 acres of larch in southern Idaho were discolored a bright red-orange this year. Early spring damage was characterized by rapid discoloration of emerging needles and, in some cases, death of new branches. Although casebearer, western spruce budworm, and a needle rust were found, they were responsible for only a minor portion of the discoloration. Other needle fungi were not identified, and we suspect that damage resulted from climatic factors or nonsporulating needle pathogens.

Discoloration of a midseason flush of needles was caused predominantly by Meria needle cast. In southern Idaho, damage was observed in larch along drainages feeding into the Little Salmon River north of New Meadows and also around the south and west sides of Cascade Reservoir. Meria needle cast was present in northern Idaho around Priest Lake throughout the year, causing needles to turn brown and drop prematurely from branches.

In late May, larch south of Priest Lake in northern Idaho were severely affected by needle casts as well as by larch casebearer. Trees of all ages were affected; damage was often most severe in lower portions of crowns. Much early spring discoloration was caused by Hypodermella needle cast (figure 1). As infected needles turned brown and died, they withered and drooped from spur shoots instead of falling from branches (figure 2). Black fruiting bodies produced on these needles characteristically cling to the spur shoots for more than one season.

Figure 2.--Larch stand severely infected with Hypodermella needle cast.

Figure 3.--Larch needles infected with Hypodermella needle cast. As needles die, they become grey and hang from shoots throughout the year instead of being shed in the fall.

Ponderosa Pine Foliage Diseases

"Greybeard" needle cast, widespread in many drainages of the Boise National Forest in 1979, was not highly visible this year. Infected trees near Crouch, Idaho, appeared to be recovering. Affected trees had persistent attachment of older grey needles.

Several areas had extensive Elytroderma needle disease this year. Some of the most heavily infected areas included drainages feeding into the middle and south forks of the Boise River, the McCall-New Meadows area, and much of the Boise Basin. A high percentage of previous year's needles on many sapling and pole-size pine was discolored a vivid orange-red during early spring to early summer. Older infections cause trees to produce many small branches that create a "brooming" effect, which may be easily confused with dwarf mistletoe infections by inexperienced crews in areas where both diseases are found.

Lodgepole Pine Foliage Diseases

The extensive infections of lodgepole pine by Lophodermella needle cast in eastern Idaho have subsided. Only infrequent infection was reported this year. A needle rust was also occasionally observed on lodgepole pine in southwestern Idaho.

Other Foliage Problems

Nearly all subalpine fir in the south hills of the Sawtooth National Forest were infected with needle cast and needle rust fungi. Surveys indicated more than 99 percent of the trees were infected; however, the infections were relatively light.

At least three different pathogens were identified on aspen foliage. They were leaf spot, ink spot, and leaf rust. Infected trees were observed throughout the aspen type in southern Idaho.

DWARF MISTLETOES

Dwarf mistletoe surveys in southern Idaho showed an average of 60 percent of lodgepole pine is infected, resulting in a total volume loss of 28.5 million cubic feet per year. In addition, on some forests up to 65 percent of the ponderosa pine and 80 percent of the Douglas-fir are infected.

Information obtained during these surveys will be compared to future surveys to determine reinvasion, spread, and intensification rates in Idaho forests. The surveys can aid in selection of the best management alternatives for infected areas, and future surveys will help re-evaluate the effectiveness of management activities in reducing dwarf mistletoe impacts.

Many forests still contain areas with a highly infected overstory. Overstory removal must be incorporated into management plans along with sanitation of young stands if susceptible trees are to be maintained on these sites. Guidelines have been developed that incorporate dwarf mistletoe control techniques into normal timber management activities.

RUSTS

White Pine Blister Rust

Blister rust continues to plague white pine forests throughout Idaho. However, positive steps are being taken to insure that white pine remains a viable crop tree within the State. Managers are selecting rust-resistant white pine as leave trees to improve survival of subsequent regeneration.

A continuing program of improving rust resistance utilizes seed orchards which are yielding resistant seed. In addition, research at the Moscow Forestry Sciences Laboratory will assist forest managers in selecting rust resistant stock and will help determine life expectancy of infected trees. A computer model for growth is being prepared for addition to the prognosis model that will assist managers in evaluating effects of management activities in areas with white pine.

Western Gall Rust

This common rust disease can be found throughout the State on lodgepole pine and ponderosa pine. Mortality usually occurs in reproduction and older infected trees, which are often poorly formed and become susceptible to wind breakage. Natural resistance to this disease is common.

DECAYS

Decay is common in old growth stands and previously logged areas where residual trees are damaged. In young stands, small amounts of decay may create major defects by the time trees are harvested.

An evaluation was recently conducted to ascertain incidence of decay in potential leave trees at three thinning areas in northern Idaho. Twenty trees from each stand were randomly selected and examined for decay using laboratory culturing techniques. Results indicated that decay had already started in less than 10 percent of the trees. Future decay losses can be avoided by careful selection of leave trees. Indian paint fungus was common only after trees were 60 years old; shorter rotations may be needed in which 40-year-old trees are released.

ROOT DISEASES

Root diseases are widespread throughout forests in northern Idaho, especially in Douglas-fir and grand fir habitat types. Mortality and growth loss are significant within heavily infected stands. Research and survey results indicate that a high proportion of the Douglas-fir and true fir attacked by bark beetles have been severely weakened by root disease. The presence of insects and diseases, which interact as a complex in causing tree mortality, makes recognition and treatment of root disease difficult. All causal factors must be considered in making sound management prescriptions.

Common root disease symptoms include varying stages of decline (recognized by off-color, thin crowns, and stress cone crops) and pockets of windthrow. Close examination of root diseased trees often reveals heavy basal pitch flow, discolored bark, and distinctive patterns of fungal tissue on or under the bark. Many different fungi may be involved in causing root diseases.

Surveys on the Idaho Panhandle and Nezperce National Forests in northern Idaho indicate that almost 38,000 acres (2 percent) and 10,000 acres (1 percent), respectively, of the commercial forest land are occupied by large root disease centers detectable from aerial photographs. Much of the root disease on the Nezperce occurred on insect-infested lodgepole pine, grand fir, and Douglas-fir. Scattered root disease causing small group or individual tree mortality is also common. Similar surveys are planned for the Clearwater National Forest.

Research on root diseases is needed to help provide management direction for reducing the serious losses.

OTHER DISEASES

Atropellis Canker

Atropellis canker in southern Idaho was confirmed in a 60-year-old lodgepole pine stand in the Yellow Jacket Creek area of the Payette National Forest, 15 miles northwest of New Meadows. Seventy-five to 80 percent of the lodgepole pines were infected. Cankers are generally long and narrow with black-stained wood underneath.

Nursery Diseases

Extensive needle and twig blight of 2-0 Engelmann spruce seedlings was encountered at the Coeur d'Alene Nursery last spring. Grey mold and Phoma blight were associated with the disease. Extended periods of cool, wet weather provided ideal conditions for buildup and proliferation of the disease.

Two private nurseries near Bonners Ferry in northern Idaho suffered severely from Sirococcus tip blight on 1-0 ponderosa pine. While this fungus is common in the Midwest and West Coast nurseries, it has never been reported as a problem in our area. Characteristic symptoms include small purplish cankers at the base of new shoots which cause shoot tips to curl over sharply and die (figure 3). Small black fruiting bodies are produced on the dead needles and infected stems. The fungus is considered an early spring problem during cool, moist weather, but losses at these nurseries did not occur until late summer. A combination of chemical sprays and freezing fall temperatures reduced further spread. Observations will be made in the spring of 1981 to monitor possible further activity.

Figure 4.-- Typical early symptoms of Sirococcus tip blight showing the characteristic bending of shoots at the point of infection.

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KEY TO TREES KILLED IN DESIGNATED MAP AREAS

FIR ENGRAVER ATTACKS, 1980

Map Designation	No. Dead Trees	Map Designation	No. Dead Trees
1	270	10	6,630
2	290	11	2,540
3	150	12	320
4	150	13	500
5	210	14	360
6	200	15	1,985
7	3,270	16	800
8	240	17	175
9	545		

DOUGLAS-FIR BEETLE ATTACKS, 1980

Map Designation	No. Dead Trees
A	40
B	100
C	850
D	65
E	120
F	350
G	500
H	550
I	400
J	400
K	100
L	150
Total	3,625

PINE ENGRAVER ATTACKS, 1980

Map Designation	No. Dead Trees by Ownership: State & Private	Federal
1		600
2	1,725	250
3	10,570	
4	1,120	
5	2,180	
6	3,940	10
7	300	
8	3,445	
9	475	
10	250	
11	1,700	
12	800	800
Total	26,505	Total 1,660

MOUNTAIN PINE BEETLE ATTACKS, 1980

Map Designation[1/]	No. Dead Trees
North Idaho	
Iron Mountain	2,620
Grizzly Mountain	155
Lochsa River	85
Soldiers Meadow Reservoir	16,000
Elk City	1,125
Red River	670
Magruder Mountain	310
Dennis Mountain	2,370
Southwest Idaho	
Lick Creek	500
Lost Valley Reservoir	300
Pyramid Point	6,000
Roseberry	22,000
Deadwood River	400
Deadwood Reservoisr	6,000
North Fork Boise River	1,500
Middle Fork Boise River	5,000
South Fork Boise River	4,000
Big Wood River	1,500
Smoky Mountains	4,500
Harrison Mountain	220
Eastern Idaho	
Spencer	2,500
Rattlesnake Creek	12,000
Kilgore	17,000
Henrys Lake	51,000
Tygee Creek	21,000
Inland Park	3,821,480
Palisades Reservoir	6,000

1/ Locations are listed generally from north to south and west to east.

DOUGLAS-FIR BEETLE
MOUNTAIN PINE BEETLE
WHITE PINE BLISTER RUST
PINE ENGRAVER BEETLE

1980

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STATE OF IDAHO

Scale 1:1,000,000
1 inch equals approximately 16 miles

Datum is mean sea level

BASE MAP

POPULATION KEY

BOISE
TWIN FALLS
Kellogg
Sandpoint

FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225 OR WASHINGTON, D.C. 20242

COMPILED IN 1964
EDITION OF 1968

FIR ENGRAVER BEETLE
WESTERN SPRUCE BUDWORM
LARCH PROBLEMS

1980

UNITED STATES
DEPARTMENT OF THE INTERIOR
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STATE OF IDAHO

Scale 1:1,000,000
1 inch equals approximately 16 miles

Forest Insect and Disease Common/Scientific Names

INSECT NAMES

Common Name	Scientific Name
Douglas-fir beetle	*Dendroctonus pseudotsugae* Hopkins
Douglas-fir tussock moth	*Orgyia pseudotsugata* McDunnough
Fir engraver	*Scolytus ventralis* LeConte
Gypsy moth	*Lymantria dispar* (Linnaeus)
Larch casebearer	*Coleophora laricella* (Hübner)
Mountain pine beetle	*Dendroctonus ponderosae* Hopkins
New budworm	*Argyrotaenia sp.* near *gogana* (Kearfott)
Pine engraver	*Ips pini* (Say)
Western balsam bark beetle	*Dryocoetes confusus* Swaine
Western pine beetle	*Dendroctonus brevicomis* LeConte
Western pine shoot borer	*Eucosma sonomana* Kearfott
Western spruce budworm	*Choristoneura occidentalis* Freeman

DISEASE NAMES

Atropellis canker	*Atropellis piniphila* (Weir) Lohm. & Cash
Aspen leaf spot	*Marssonia* sp.
Christmas tree blight	*Rhabdocline pseudotsugae* Syd.
Douglas-fir needle cast	*Rhabdocline* sp.
Dwarf mistletoes	*Arceuthobium* sp.
Elytroderma ("Ely") needle cast	*Elytroderma deformans* (Weir) Dark.
Greymold blight	*Botrytis cinerea* Pers, ex Fr.
Ink spot	*Ciborina* sp.
Larch needle cast	*Hypodermella laricis* Tub.
Leaf rust	*Melampsora* sp.
Leaf spot	*Marssonia* sp.
Lodgepole pine needle cast	*Lophodermella concolor* (Dern.) Darker
Meria needle cast	*Meria laricis* Vuill.
Needle rust	*Melampsora* sp. *Coleosporium* sp.
Rhabdocline needle cast	*Rhabdocline* sp.
Sirococcus tip blight	*Sirococcus strobilinus* Preuss.
Western gall rust	*Endocronartium harknesii* (Moore) Y. Hiratsuka
White pine blister rust	*Cronartium ribicola* Fisch.

Idaho Department of Lands

USDA Forest Service

Northern and Intermountain Regions